



NURSES' KNOWLEDGE OF PHARMACEUTICAL
CARE WITH THEIR PERCEPTION AND
EXPECTATION ON THE POTENTIAL ROLES OF
PHARMACIST IN PRIVATE OUTPATIENT
HAEMODIALYSIS CENTRES

BY

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ABSTRACT

Pharmaceutical care issues are common among ambulatory haemodialysis patients. Provision of pharmaceutical care by pharmacist has benefitted this population, but it is yet to be implemented in private outpatient haemodialysis centres. Currently, all the centres in Malaysia do not have designated roles for pharmacist. As nurses are available in the centres at most of the times, it is best if both pharmacists and nurses could synergise their expertise and work together for better coordination of care to haemodialysis patients. This study was conducted to develop a valid and reliable questionnaire, which later on was used to evaluate the nurses' knowledge of pharmaceutical care aspect of the patient; and to determine nurses' perception and expectation of the potential roles of a pharmacist in private outpatient haemodialysis centre. A set of questionnaire was developed after an extensive literature review of the related published studies. Content validity index was used to examine the validity of the questionnaire, whereas Cronbach's alpha was computed for its reliability. A cross-sectional study was conducted among nurses in the private outpatient haemodialysis centres in Kuantan, Pahang using a self-administered questionnaire. Data were entered into SPSS IBM version 21, where descriptive and inferential analyses were conducted. Scale-level content validity index calculated for content validity was 0.91. Cronbach's alpha generated for reliability analysis reached a value of 0.70. A total of 63 nurses participated in this study. The majority of them (84.1%) perceived that a pharmacist is reliable as the source for general and clinical drug information. The main expectations expressed by nurses were that pharmacists provide drug information to other healthcare professionals (96.8%), educate and counsel patients on the safe use of medicines (93.7%). The reported top reason for nurses' willingness to work with a pharmacist in private outpatient haemodialysis centre was benefits to patients, whereas financial viability was concerned for those who were reluctant. The questionnaire developed in this study showed sufficient validity and satisfactory reliability. More than half of the nurses possessed adequate knowledge of pharmaceutical care. Positive perception and high expectation on the potential roles of a pharmacist were expressed by over half of those surveyed. A large proportion of them was willing to work with a pharmacist in private haemodialysis centre. The present work may shed some light on the potential implementation of pharmaceutical care services and interprofessional collaboration between nurses and pharmacists in private outpatient haemodialysis centre.

خلاصة البحث

تعتبر قضايا الرعاية الصيدلانية شائعة بين مرضى غسيل الكلى الخارجيين. وقد استفاد تقديم الرعاية الصيدلانية من قبل الصيدلي هذه الفئة من السكان، ولكن لم يتم تنفيذه بعد في مراكز الغسيل الكلى الخاصة بالمرضى الخارجيين. حاليًا، لا توجد أدوار مخصصة للصيدلي في جميع المراكز في ماليزيا. ونظرًا لوجود الممرضات في المراكز في معظم الأوقات، فمن الأفضل أن يتعاون كل من الصيادلة والممرضات مع خبراتهم ويعملون معًا من أجل تنسيق أفضل للرعاية لمرضى غسيل الكلى. وقد أجريت هذه الدراسة لتطوير استبيان صحيح وموثوق، والذي تم استخدامه في وقت لاحق لتقييم معرفة الممرضات في جانب الرعاية الصيدلانية للمرضى ولتحديد إدراك الممرضات وتوقعهم للأدوار المحتملة لصيدلي في مراكز الغسيل الكلى الخاصة بالمرضى الخارجيين. وقد وضعت مجموعة من الاستبيانات بعد مراجعة الأدبيات الواسعة المتعلقة بالدراسات المنشورة. وتم استخدام فهرس صحة المحتوى لفحص صحة الاستبيان، في حين تم حساب ألفا كرونباخ لموثوقيتها. وقد أجريت دراسة مستعرضة بين الممرضات في مراكز الغسيل الكلى في العيادات الخارجية الخاصة في كوانتان، باهانج باستخدام استبيان للتقييم الذاتي. وتم إدخال البيانات في SPSS IBM الإصدار 21، حيث أجريت التحليلات الوصفية والاستنتاجية. وكان مؤشر صحة المحتوى على مستوى النطاق المحسوب لصلاحية المحتوى 0.91. وبلغت قيمة ألفا كرونباخ الناتجة لتحليل الموثوقية 0.70. وشارك ما مجموعه 63 من الممرضات في هذه الدراسة. وينظر الغالبية منهم (84.1%) أن الصيدلي هو موثوق بها كمصدر للمعلومات العامة والسريية المخدرات. وكانت التوقعات الرئيسية التي أعربت عنها الممرضات هي أن الصيادلة يقدمون معلومات عن الأدوية لأخصائيي الرعاية الصحية الآخرين (96.8%)، ويقومون بتثقيف وإرشاد المرضى حول الاستخدام الآمن للأدوية (93.7%). وكان السبب كبار ذكرت لرغبة الممرضات للعمل مع الصيدلي في مراكز الغسيل الكلى في العيادات الخارجية الخاصة فوائدها للمرضى، في حين يشعر بالقلق الجدوى المالية لأولئك الذين كانوا مترددين. وأظهر الاستبيان الذي تم تطويره في هذه الدراسة صلاحية كافية وموثوقية مرضية. وتمتلك أكثر من نصف الممرضات معرفة كافية بالرعاية الصيدلانية. وتم تعبير عن التصور الإيجابي والتوقعات العالية بشأن الأدوار المحتملة للصيدلي من قبل أكثر من نصف الذين شملهم الاستطلاع. وكانت نسبة كبيرة منهم على استعداد للعمل مع الصيدلي في مراكز الغسيل الكلى الخاصة. وقد يلقي العمل الحالي بعض الضوء على تنفيذ خدمات الرعاية الصيدلانية المحتملة والتعاون بين المهنيين والممرضين والصيادلة في مراكز الغسيل الكلى الخاصة لمرضى الخارجيين.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degrees at IIUM or other institutions.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Haemodialysis, which is usually initiated in patients with end-stage renal disease (ESRD) is one of the modalities available under renal replacement therapy alongside continuous ambulatory peritoneal dialysis and renal transplant (Smyth, Jones, & Saunders, 2016). In haemodialysis, patients spend approximately three to four hours, three times a week attached to a dialysis machine, and this treatment is usually performed at outpatient haemodialysis centre (Diamant et al., 2011). Generally, patients with ESRD who are on dialysis have multiple comorbidities and are taking on average 10 to 12 medications daily (Jo-Anne et al., 2017). Over the last decade, diabetes mellitus has accounted for more than half of the primary renal disease in new dialysis patients. In 2016, a staggering 65% of them had diabetes, whereas the other 19% had hypertension as their primary renal disease (Malaysian Society of Nephrology, 2018).

In Malaysia, government haemodialysis centres are very limited as public hospitals are overrun by a great number of patients with acute kidney injury and thus, able to accept a limited number of patients for maintenance dialysis (Prasad & Jha, 2015). Besides, kidney transplant candidates or those with reversible acute injuries have limited access to these hospitals (Jha & Chugh, 2003). Consequently, such limitation has created a demand for haemodialysis services in the private sector as most of the patients opt for private outpatient dialysis centres (The Malaysian National Haemodialysis Quality Standards, 2018). Furthermore, these centres are run heavily by nurses with the majority of them having a post-basic certificate in renal nursing,

whereby they undergo a six-month competencies training in providing safe and skilful nursing care to ESRD patients.

Haemodialysis necessitates specialised nursing care, which includes the establishment of the interpersonal and therapeutic relationship, attention to the functional limitations, mental disorders, and educational needs of dialysis patients (Stavropoulou et al., 2017). Nurses, being the main healthcare professionals in providing such care, are also responsible for identifying the individual essential care needed by the patients (Vafaei & Nobahar, 2017). Nurses have established roles in assisting the patients in adapting to their current status (as haemodialysis patients) by reducing their anxiety and offering some emotional and decision-making support (Davison, 2010). A study has pointed out that nurses' supportive behaviour is highly important in comforting patients, establishing their confidence, and at the same time, expediting their adaptation to the haemodialysis processes (Asgari et al., 2011). Therefore, nursing care is undoubted of pivotal importance in promoting and improving the haemodialysis patients' quality of life and satisfaction (Nobahar, 2017).

Currently, in Malaysia, nurses are still the on-site main players in assisting nephrologists or physicians in charge of patients' management at the private outpatient haemodialysis centre (The Malaysian National Haemodialysis Quality Standards, 2018). The working environment in haemodialysis centres is demanding as nurses deal with sophisticated modern dialysis machines, complex dialysis techniques, and strict implementation of infection control procedures in order to provide safe and effective care to the patients (Bennett, 2011; Karakoc et al., 2016). One of the main hurdles to the provision of nursing care in dialysis patients is increased workload, augmented by multiple causes, which include the limited number of employed nurses and other healthcare professionals, and the escalating number of patients in need of

dialysis treatment (Fadem et al., 2011; Deif et al., 2015). Working in a dialysis unit render nurses susceptible to burnout because of the points mentioned earlier, which can affect patient care and clinical outcomes (Argentero, Dell'Olivo, & Ferretti, 2008; Stavropoulou et al., 2017).

Haemodialysis indeed can extend the life of end-stage renal disease (ESRD) patients, but the process is stressful, and thus, can bring upon various psychological issues, which may lead to patients' mental disturbances, such as depression and suicidal behaviour (Chen, Wu, & Wang, 2003; Curtin et al., 2008). It is important to note that when depressed, dialysis patients have a very effective escape method at their disposal such as suicide (De Sousa, 2008). Moreover, anxiety is likely to occur since the haemodialysis process and a multitude of medical complications give them a lot to worry and anticipate about (De Sousa, 2008). ESRD also affects the patients' body image due to oedema and the presence of arteriovenous fistulae or central venous catheter from haemodialysis (Cleary & Drennan, 2005). Further insight studies among haemodialysis community revealed that their health level, performance status, and self-esteem left much to be desired (Perneger et al., 2003; Hedayati, Yalamanchili, & Finkelstein, 2012). Once subjected to haemodialysis, these patients start living a different experience in which their standard of living and rhythm of life begin to change. Besides, their desires and values are often not fulfilled nor respected; in most cases, it made them feel rejected and secluded (Poorgholami et al., 2016).

Additionally, this population is at a very high risk of experiencing medication errors, such as medication dose omissions, heparin infusion mistakes, and miscommunication of medication orders, which are reported as the most common patient safety events (Pennsylvania Patient Safety Advisory, 2010). Nurses are mostly occupied with daily tasks related to the dialysis process, and they usually do not have

dedicated time to verify patients' medication adherence (St. Peter, 2010) or to educate the patients about medication use (Mateti et al., 2013). Poor medication adherence is common among dialysis patients (Chan, Zalilah, & Hii, 2012) and identifying it can be challenging for nurses since it requires frequent reviewing of patients' medications and verifying prescription filling records (Cardone et al., 2010). Besides, haemodialysis patients are more likely to encounter pharmaceutical care issues due to their various comorbidities, complex medication regimen, frequent medication adjustments on dialysis versus non-dialysis days, restricted lifestyles, and high daily intake of medications (Al-Ramahi et al., 2016; George et al., 2017; Majed et al., 2018). Pharmaceutical care issues in dialysis-dependent patients have been shown to impose a substantial economic burden (Pai et al., 2013).

It is acknowledged that the Pharmaceutical Services Division of the Ministry of Health Malaysia has broadened its services to dialysis patients in the public sector with the establishment of Dialysis Medication Therapy Adherence Clinic. Pharmacist deployment to this facility has brought a positive impact on patients and provides a continuity of pharmaceutical care (Pharmaceutical Services Division, 2011). However, such implementation in private haemodialysis centres is still far from any discussion with relevant authorities; what more policy changes.

With all the aforementioned pharmaceutical care issues among patients in haemodialysis centres, a multi-disciplinary healthcare team is indispensable to provide a better quality of care for haemodialysis patients (Junaid et al., 2014). Engagement of pharmacist in private haemodialysis centres can create a positive impact on patient care outcomes by promoting cost-effective therapy and providing medication education to both patients and healthcare professionals (Erickson, Szumita, & Cotugno, 2008). Furthermore, this is a setting where access to patients is privileged

since each haemodialysis session lasts for three to four hours, which allows an ideal opportunity for the pharmacist to provide specialised pharmaceutical care such as identification and resolution of pharmaceutical care issues (Pai et al., 2013). As nurses are available most of the time in the centres, it is best if both pharmacists and nurses could synergise their expertise and work together. If such collaboration can be established, the results would likely contribute to better coordination of care and promotion of an ideal pharmaceutical care setup in outpatient private haemodialysis centres.

The need to improve patient care has become an interesting topic among the healthcare community globally (Hobson, Scott, & Sutton, 2010). Interprofessional collaboration between various healthcare professionals can greatly enhance patient care (Reeves & Lewin, 2004). Over the last decade, pharmacists have begun venturing into this collaborative relationship through the integration of their services with other healthcare professionals. Several studies reported that physician-pharmacist collaboration has contributed to improved clinical outcomes and optimised patient care (Irons et al., 2002; Kiel & McCord, 2005). Although professional synergy between pharmacist and nurse has been advocated in the past (Gouveia & Shane, 2001), reports on the collaboration between these two professions in private dialysis centre are limited (Salgado et al., 2014).

Nurses are undoubtedly an important component of the healthcare setting. They play a vital role in developing a collaborative relationship with the pharmacists as they communicate with patients the most and they are the ones who administer medications to patients (Armitage & Knapman, 2003). Moreover, they can offer valuable information on patients' condition, which, in turn, help pharmacist to optimise a therapeutic plan as per patient needs. A study by Feldman et al. (2012)

concluded that nurse-pharmacist collaboration reconciles many discrepancies regarding medications, and such collaboration is efficient and cost-effective.

According to the 24th Report of the Malaysian Dialysis and Transplant Registry (2018), both acceptance and prevalence rates of dialysis treatment in Malaysia has increased by nearly two-fold from 2007 to 2015. Such increment is of great concern as this means more nurses will be working to meet the demands, and there is an increased risk of medication errors occurrence in the dialysis centre. A recent study by Samsiah et al. (2016) reported that the annual estimated cost of medication errors in Malaysia was MYR 111,924. Thus, the notable growth in the dialysis services should be accompanied by a similar increase in the commitment to maintain a high-quality standard of care.

Dialysis patients are at elevated risk of medication error due to their multiple comorbidities, high pill burden, and the frequency of medication changes (Ledger & Choma, 2008). Deployment of pharmacist to haemodialysis centres has the potential to help nurses reduce medication errors. Several strategies that can be performed by a pharmacist to minimise such errors include medication reconciliation, medication review, identification and management of pharmaceutical care issues (Joy et al., 2005; Kliger, 2015). Pharmacists who received extensive training in drug-related areas including pharmacology (effect of drugs on the body), pharmacokinetics (effects of the body on drugs), drug interaction, and medication therapy management are better suited than nurses to perform the aforementioned tasks in dialysis centre (St. Peter, 2010). With these efforts in place, we could perhaps respond better to the challenging burden of end-stage renal disease and the rising need for renal replacement therapies in our country.

1.2 PROBLEM STATEMENT

To date, there has been no study conducted on nurses' knowledge of pharmaceutical care aspect of a patient within the private haemodialysis centre. Regardless, several studies have included hospital nurses' knowledge of pharmaceutical care (Iro et al., 2014; Iqbal & Ishaq, 2017). Determining nurses' knowledge of pharmaceutical care aspect of patient is imperative in the investigation of the possible roles of a pharmacist in private haemodialysis centre. Pharmaceutical care practise does not and should not exist in isolation from other healthcare services. It must be provided in tandem with patients and healthcare providers, including pharmacists and nurses (Valera et al., 2011).

Moreover, very little has been published about nurses' perception and expectation on the roles of a pharmacist in private haemodialysis centre and their willingness to work with a pharmacist at this juncture (Salgado et al., 2014). Weighing nurses' perception can be considered vital, as it plays a key role with respect to their future expectations and receptivity towards a pharmacist's role in the centre. All of these perspectives can help nurses to understand pharmacists' situation in this setting better so that it can be enhanced and changed to meet dialysis patients' drug-related needs.

Collaboration between pharmacist and nurses was not widely debated among researchers and very few papers investigated this issue (Urbine et al., 2012; Khan et al., 2014; Rayes et al., 2015). Even less has been published within the context of outpatient dialysis centre (Salgado et al., 2014). Although care within private haemodialysis facilities is currently directed by a nephrologist/physician, it also involves nurses who probably spend more time with the patients. Therefore, they can possibly influence patients' behaviours and attitudes in the setting. As nurses are

responsible for performing a great proportion of care actions to patients, identifying their receptivity is of paramount importance when planning the implementation of pharmaceutical services in a private outpatient haemodialysis centre.

Across the globe, there are a small number of studies conducted regarding nurses' perspective on pharmacists' roles in outpatient dialysis centres. It is crucial to remember that the difference in healthcare systems, beliefs, cultures, and values across the regions may produce different results. Nonetheless, knowledge, perception, and acceptance of nurses towards a pharmacist's role have not been explored in the context of Malaysian haemodialysis centre. To the best of our knowledge, this paper is the pioneer research paper discussing such an issue in the Malaysian healthcare system. Therefore, it is relevant to probe this matter in Malaysia so that the outcomes of this study can be compared with other studies in a different target group.

1.3 RESEARCH QUESTIONS

This study intends to answer the following questions:

1. How to assess nurses' pharmaceutical care knowledge and their perception and expectation regarding the potential roles of a pharmacist in private haemodialysis centres?
2. What is the nurses' knowledge of pharmaceutical care aspect of the patient in private haemodialysis centres?
3. What are the nurses' perception and expectation on the potential roles of a pharmacist in private haemodialysis centres?

1.4 RESEARCH OBJECTIVES

In general, this study aims to evaluate the pharmaceutical care knowledge among nurses and the potential roles of a pharmacist in private outpatient haemodialysis centres from the nurses' point of view. Specifically, this study intends to achieve the following objectives:

1. To develop a valid and reliable questionnaire for nurses' pharmaceutical care knowledge, perception, and expectation on the potential roles of a pharmacist in private haemodialysis centres.
2. To evaluate nurses' knowledge of pharmaceutical care aspect of patient in private haemodialysis centres.
3. To determine nurses' perception and expectation on the potential roles of a pharmacist in private haemodialysis centres.

1.5 SIGNIFICANCE OF THE STUDY

The findings of this study are expected to benefit healthcare administrators, policymakers, pharmacists, nurses, and dialysis patients. It is hoped that this study can help healthcare administrators and policymakers in identifying the gap between nurses and pharmacists. This study can be used for future research, discussion, and development of the pharmacy profession. The recognition of pharmacists' expertise and competence by nurses would likely develop if nurse-pharmacist collaboration can be established in the private haemodialysis centre. It is acknowledged that any changes in policies or systems require approval from the higher authority. Thus, the findings of this study could serve as references for the higher authority to determine the relevancy of such collaboration. If the provision of pharmaceutical services by a pharmacist in the centres can be implemented, the outcomes would likely benefit haemodialysis patients by enhancing the level of care.

CHAPTER TWO

LITERATURE REVIEW

2.1 PHARMACEUTICAL CARE ISSUES IN FOCUS

Over the last decade, pharmacist's roles have been expanding around the globe, and the number of pharmacists providing services beyond the traditional role of dispensing medications has flourished (Toklu & Hussain, 2013). In Malaysia, pharmacists seem to be dedicated to upholding the profession by adopting the pharmaceutical care concept in providing more patient-oriented services (Hassali, Mak, & See, 2014). The term “pharmaceutical care” was defined by Hepler and Strand (1989) as the responsible provision of drug therapy with the purpose of achieving definite outcomes that can improve a patient's quality of life (as cited in the European Directorate for the Quality of Medicines & Healthcare [EDQM], 2012). Pharmaceutical care requires a pharmacist to cooperate with the patient and other healthcare professionals in designing, implementing, and monitoring the therapeutic plan that can produce specific therapeutic outcomes for the patient (Upadhyay & Ooi, 2018). Pharmaceutical care approaches have also been used to prevent medication errors (Ucha-Smartin et al., 2009; Spalla & Castilho, 2016). The United States Food and Drug Administration [FDA] (2016) described medication error as any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer.

Pharmaceutical care involves three major functions, namely identifying potential and actual drug-related problem (DRP), resolving actual DRP, and preventing DRP (EDQM, 2012). Drug-related problem was defined by Pharmaceutical Care Network Europe (2019) as an event or circumstance involving